

Application No. 09/475,544
Amendment dated January 27, 2004
Reply to Office Action of August 27, 2003

REMARKS/ARGUMENTS

Responsive to the Official Action mailed August 27, 2003, applicants have further revised the claims of their application in an earnest effort to place this case in condition for allowance. Specifically, claim 3 has been canceled, and independent claim 1 amended. Reconsideration is respectfully requested.

In the Action, the Examiner has maintained her rejection of the pending claims under 35 U.S.C. §103, with continued reliance upon U.S. Patent No. 3,692,618, to Dorschner et al., in view of U.S. Patent No. 4,107,374, to Kusunose et al., with further reliance upon U.S. Patent No. 4,808,467, to Suskind et al., and PCT Publication No. WO 96/13071, to Kelly et al. The Examiner's rejections are respectfully traversed. It is respectfully maintained that the prior art simply does not teach, suggest, or contemplate a nonwoven fabric structure, formed from spunbond continuous filaments, with hydroentanglement effected to form interengaged packed loops, *with the filaments being substantially free of breaking, wrapping, and knotting*. As a consequence of this novel structure, relatively *high elongation values are obtained* for the fabric, which is achieved by virtue of *meshed coils and loops of the fabric filaments disengaging, and straightening and elongating under a load*.

In the Action, the Examiner has predicated her rejection of the pending claims based upon the position that mechanical needling (needlepunching) is a mechanical process for entangling filaments that is equivalent to hydroentanglement, since both are considered as means to mechanically entangle filaments in the art. Applicants must respectfully disagree with this statement, since such processes *are not considered equivalent* by those skilled in the

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art. Consideration of the differences underscores the inventiveness and patentability of applicants' novel fabric construct.

In support of their position, applicants enclose herewith publically available information obtained from the internet. First, applicants include herewith information obtained at the website of John R. Starr, Inc., management consultants in the field of nonwoven products and processes. As will be noted, these management consultants specifically differentiate hydroentanglement from needlepunching processes, particularly noting that "needlepunched nonwovens are typically lofty and strong, *and heavier than most other nonwoven products*". Applicants have previously noted that their invention, as specifically claimed, contemplates that fabrics of relatively high basis weights can be very efficiently formed from relatively thick filaments *by hydroentanglement*, in clear distinction to conventional thinking in the industry.

Notably, applicants' study of on-line industry publications located the enclosed article at NonwovensIndustry.com, discussing spunlacing, i.e., hydroentangling processes. Noting the comments of Mr. Don Gillespie, Vice-President of spunlacing machinery supplier Fliessner, Charlotte, North Carolina, this document states that:

"Two reasons spunlacing is preferential to needlepunching are its *quick line speeds* and its *ability to keep the fibers from damage*", Mr. Gillespie added.

The thrust of these comments are well-known to those skilled in the art: *barbed needles employed for needlepunching inevitably damage fabric fibers or filaments.*

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Considering the nature of the process, insertion and removal of a great multiplicity of barbed needles, such breakage is not at all surprising, and is a well-known phenomenon.

Thus, applicants must respectfully maintain that contrary to the Examiner's position, those skilled in the art *do not* consider hydroentanglement and needlepunching processes to be equivalent.

Because of the inevitable damage that results from a needlepunching process, a fabric formed by such a process *cannot* provide a fabric construct as claimed, including *filaments substantially free of breakage*. The Examiner's attention is respectfully invited to applicant's photomicrographs of their application, Figures 6 and 7. A careful study of these photomicrographs shows that the spunbond filaments employed for fabric formation are, indeed, *substantially free of breakage*. In fact, it is very difficult, if not impossible, to discern *any breakage* in the magnified fabric construct. Those skilled in the art recognize that this is in clear distinction from a needlepunched construct, where the repeated insertion and withdrawal of barbed needles inevitably damages the fibers or filaments of the web structure being processed.

Applicants have amended their claims to more particularly recite the types of polymers which can be employed for achieving the highly beneficial results of their novel invention: high elongation values are achieved as meshed coils and loops of filaments disengage, and the filaments straighten and elongate under a load. As discussed in applicants' specification, this is in clear distinction from *the typical knotting and breakage of hydroentangled, staple fiber constructs*, and is also distinct from the elongation

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characteristics of needlepunched constructs, wherein significant fiber/filament damage *inevitably weakens* fibers, and precludes comparable elongation performance.

Thus, applicants must respectfully traverse the Examiner's rejections. The Examiner has admitted the novelty of applicants' claimed fabric construct, and has expressly acknowledged that the principal Dorschner et al. reference fails to teach applicants' fabric construct as claimed. As previously noted, the clear thrust of this patent is to avoid filament stratification during spunbond formation, with *no teaching* regarding treatment by hydroentanglement.

The Examiner's reliance upon the secondary Kusunose et al. reference thus becomes critical, yet this reference clearly fails to overcome the clear deficiencies in the teachings of the principal Dorschner et al. patent.

Kusunose et al. principally concerns processing of fibrous bundles "each consisting of a plurality of extremely fine filaments or fibers having a denier of 0.005 to 0.5". Applicants must respectfully maintain, as previously submitted, that this reference *teaches away* from applicants' invention as claimed, since the teachings of this reference are consistent with use of hydroentanglement processes for *fine denier fibers or filaments*. Applicants's claims are specifically directed to filaments having a significantly higher denier (i.e., thickness).

Additionally, Kusunose et al. specifically contemplates formation of a substratum sheet to be impregnated with an elastic synthetic polymer. There are *no teachings* in this patent of providing the specific structural characteristics set forth in applicants' claims, including elongation properties, nor any teaching or suggestion of achieving such properties

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attendant to disengagement of meshed coils and loops, and straightening and elongation of filaments under load. Applicants must respectfully maintain that the Examiner is selecting teachings from the cited references, with the guidance of applicants' own disclosure, while not placing such teachings in the context of each reference's disclosure. Clearly, a reference must be looked at in its entirety, and not in a select vacuum, to appreciate how those skilled in the art would interpret its teachings.

Moreover, while the substratum sheet formed in accordance with the Kusunose et al. reference may provide acceptable performance whether hydroentangled or needlepunched, applicants must respectfully disagree with the Examiner's position that such processes should be considered equivalent in the context of applicants' pending claims. Applicants have specified particular physical and structural characteristics derived by use of hydroentanglement, which properties and characteristics *cannot* be equivalently obtained by needlepunching, in light of the inevitable fiber/filament damage caused by such a process.

Applicants note the Examiner's further reliance upon the teachings of Suskind et al., but respectfully maintain that this reference clearly fails to overcome the deficiencies in the combined teachings of Dorschner et al. and Kusunose et al. in teaching or suggesting applicants' novel nonwoven fabric construct.

In the Action, the Examiner has essentially dismissed the significance of applicant's claimed physical characteristics, merely stating that the "value[s] are broad and encompass typical values found in the prior art. Further each of the elements are recognized as result effective variables in the field of endeavor and it has been held that discovering optimum

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values would have been (sic) or result effective variables involves only routine experimentation".

Applicants must respectfully take strong exception with this over-generalization of applicants' claimed invention. As specifically discussed above, these performance characteristics result from applicants' *admittedly novel process*. The Examiner has not provided a fair basis for rejection, by citation of specific prior art teachings to support a conclusion that such values are "broad and encompass typical values". It is applicants' position that the prior art *does not* teach such values, in particular, the elongation values which are achieved in accordance with applicants' invention, and which clearly differentiate applicants' invention from the prior art. Again, as the Examiner has specifically acknowledged the novelty of applicants' invention, it is respectfully maintained that it is not proper to merely characterize these claim values as "typical" when the Examiner has acknowledged that the claimed invention is *not anticipated* by the cited prior art.

Regarding claims 47-51, applicants must respectfully disagree that this is a "mere duplication" as characterized by the Examiner. The Examiner has acknowledged that applicants' nonwoven fabric, as claimed, is not anticipated by the prior art, with claims 47 tp 51 directed to a novel fabric construct wherein plural laminations can be efficiently integrated by thermal bonding. It is respectfully submitted that the Examiner's reliance upon *In Re Harza*, (citation omitted), is misplaced, since this case concerned a recitation in claim 1 of "a plurality of ribs on each side of the web whereas Gardner [the cited reference] shows only a single rib on each side of the web". In the present case, unlike *Harza*, it has been

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acknowledged by the Examiner that applicants' claimed single ply fabric construct is novel, and not anticipated.

In the Action, the Examiner has withdrawn the indicated allowability of claims 76-92 on the basis of the newly cited Kelly et al. reference. The rejection of these claims is respectfully traversed. Most notably, Kelly et al. is limited in its teachings to the use of lyocel fibers, that is, fibrous elements of discrete length, in distinction from the substantially continuous polymeric filaments set forth in applicants' pending claims.

Moreover, it is respectfully maintained that none of Dorschner et al., Kusunose et al., or Kelly et al. teach or suggest applicants' claimed plural layer, continuous filament fabric, as specified in claims 76-92. Claim 76 provides that plural layers of continuous filament fabrics provided which have been *initially thermally bonded*, with subsequent hydroentanglement acting to form a cohesive and durable fabric, characterized by the *substantial absence of thermal bonding in the layers*.

The teachings in Kelly et al. contemplate fabric formation "by hydroentanglement, the activation of thermally activatable fibers, or the use of a bonding agent". There is simply *no suggestion whatsoever* in this reference of *initially* effecting thermal bonding, and subsequently effecting hydroentanglement, as claimed. Thus, while the Examiner has stated that "it would have been obvious . . . to modify the nonwoven web and provide bonding prior to hydroentanglement", it is respectfully submitted that this is simply readying beyond the references, and that Kelly et al. simply fails to in any way overcome the clear deficiencies in

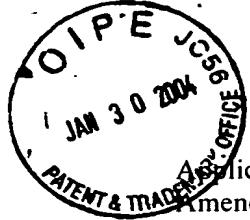
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the teachings of Dorschner et al. or Kusunose et al. in suggesting a plural layer of fabric as specifically recited in claims 76-92.

In summary, formal allowance of pending claims 1-4, 6-13m 45-51, and 76-92 is believed to be in order and is respectfully solicited. The Examiner has clarified that her rejection is predicated upon the equivalency of hydroentangling and needlepuching processes, but applicants respectfully maintain that those skilled in the art differentiate these processes, and recognize the shortcomings associated with needlepunching, including inevitable fiber/filament damage and breakage.

The non-obviousness of applicants' claimed fabric construct is evidenced by the unique elongation characteristics, which are derived from the interengaged packed loops of the spunbond, filamentary material. Applicants have specifically directed their claims to filament denier ranges which are distinct from those typically employed in the hydroentangled process.

Finally, applicants respectfully refer to M.P.E.P. Section 2143.01, which specifically admonishes that "the prior art must suggest the desirability of the claimed invention", and that the "fact that references can be combined or modified is not sufficient to establish *prima facie* obviousness". Is it undisputed that the principal Dorschner et al. reference fails to teach or suggest applicants' fabric construct, and it is not at all apparent from the references themselves that those skilled in the art would consider Kusunose et al. (relating to formation of a substratum for receiving an elastic synthetic polymer for making synthetic leather) to teach a modification of the principal Dorschner et al. patent. Moreover, the non-equivelancy



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of hydroentangling and needlepunching processes, as considered by those skilled in the art, is plainly evident.

Should the Examiner wish to speak with applicants' attorneys, they may be reached at the number indicated below.

The Commissioner is hereby authorized to charge any additional fee which may be required in connection with this submission to Deposit Account No. 23-0785.

Respectfully submitted,

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CERTIFICATE OF MAILING

I hereby certify that this Amendment is being deposited with the United States Postal Service with sufficient postage at First Class Mail in an envelope addressed to: Mail Stop Patent Application, Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450 on **January 27, 2004**.

